

SEQUENCE LISTING

<110> Bandman, Olga
Tang, Y. Tom
Hillman, Jennifer L.
Yue, Henry
Guegler, Karl J.
Corley, Neil C.
Gorgone, Gina
Azimzai, Yalda
Lu, Aina

<120> Protein Kinase Homologs

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<140> To Be Assigned
<141> Herewith

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Ala	Glu	Asp	Ser	Gly	Leu	Arg	Leu	Asp	Gly	Gly	Ser	Gly	Ser	Thr
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Ser	Ser	Ser	Gly	Cys	His	Pro	Gly	Gly	Ala	Arg	Ala	Gly	Pro	Ser
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Pro	Ala	Ser	Ser	Ser	Pro	Ala	Pro	Gly	Gly	Gly	Arg	Ser	Leu	Ser
				65					70					75
Ala	Gly	Ser	Gln	Thr	Ser	Gly	Phe	Ser	Gly	Ser	Leu	Phe	Ser	Pro
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Ala	Ser	Cys	Ser	Ile	Leu	Ser	Gly	Ser	Ser	Asn	Gln	Arg	Glu	Thr
				95					100					105
Gly	Gly	Leu	Leu	Ser	Pro	Ser	Thr	Pro	Phe	Gly	Ala	Ser	Asn	Leu
				110					115					120
Leu	Val	Asn	Pro	Leu	Glu	Pro	Gln	Asn	Ala	Asp	Lys	Ile	Lys	Ile
				125					130					135
Lys	Ile	Ala	Asp	Leu	Gly	Asn	Ala	Cys	Trp	Val	His	Lys	His	Phe
				140					145					150
Thr	Glu	Asp	Ile	Gln	Thr	Arg	Gln	Tyr	Arg	Ala	Val	Glu	Val	Leu
				155					160					165
Ile	Gly	Ala	Glu	Tyr	Gly	Pro	Pro	Ala	Asp	Ile	Trp	Ser	Thr	Ala
				170					175					180
Cys	Met	Ala	Phe	Glu	Leu	Ala	Thr	Gly	Asp	Tyr	Leu	Phe	Glu	Pro
				185					190					195
His	Ser	Gly	Glu	Asp	Tyr	Ser	Arg	Asp	Glu	Asp	His	Ile	Ala	His
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Ile	Val	Glu	Leu	Leu	Gly	Asp	Ile	Pro	Pro	Ala	Phe	Ala	Leu	Ser
				215					220					225
Gly	Arg	Tyr	Ser	Arg	Glu	Phe	Phe	Asn	Arg	Arg	Gly	Glu	Leu	Arg
				230					235					240
His	Ile	His	Asn	Leu	Lys	His	Trp	Gly	Leu	Tyr	Glu	Val	Leu	Met
				245					250					255

Glu	Lys	Tyr	Glu	Trp	Pro	Leu	Glu	Gln	Ala	Thr	Gln	Phe	Ser	Ala
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Phe	Leu	Leu	Pro	Met	Asn	Glu	Tyr	Ile	Pro	Glu	Lys	Arg	Ala	Ser
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Ser	Thr	Leu	Tyr	Lys	Gly	Glu	Tyr	His	Arg	Ala	Pro	Val	Ala
								35	40				45
Lys	Val	Phe	Lys	Lys	Leu	Gln	Ala	Gly	Ser	Ile	Ala	Ile	Val
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Gln	Thr	Phe	Asn	Lys	Glu	Ile	Lys	Thr	Met	Lys	Lys	Phe	Glu
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Pro	Asn	Ile	Leu	Arg	Ile	Phe	Gly	Ile	Cys	Ile	Asp	Glu	Thr
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Thr	Pro	Pro	Gln	Phe	Ser	Ile	Val	Met	Glu	Tyr	Cys	Glu	Leu
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Thr	Leu	Arg	Glu	Leu	Leu	Asp	Arg	Glu	Lys	Asp	Leu	Thr	Leu
								110	115				120
Lys	Arg	Met	Val	Leu	Val	Leu	Gly	Ala	Ala	Arg	Gly	Leu	Tyr
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Leu	His	His	Ser	Glu	Ala	Pro	Glu	Leu	His	Gly	Lys	Ile	Arg
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Ser	Asn	Phe	Leu	Val	Thr	Gln	Gly	Tyr	Gln	Val	Lys	Leu	Ala
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Phe	Glu	Leu	Arg	Lys	Thr	Gln	Thr	Ser	Met	Ser	Leu	Gly	Thr
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Arg	Glu	Lys	Thr	Asp	Arg	Val	Lys	Ser	Thr	Ala	Tyr	Leu	Ser
								185	190				195
Gln	Glu	Leu	Glu	Asp	Val	Phe	Tyr	Gln	Tyr	Asp	Val	Lys	Ser
								200	205				210
Ile	Tyr	Ser	Phe	Gly	Ile	Val	Leu	Trp	Glu	Ile	Ala	Thr	Gly
								215	220				225
Ile	Pro	Phe	Gln	Gly	Cys	Asn	Ser	Glu	Lys	Ile	Arg	Lys	Leu
								230	235				240
Ala	Val	Lys	Arg	Gln	Gln	Glu	Pro	Leu	Gly	Glu	Asp	Cys	Pro
								245	250				255
Glu	Leu	Arg	Glu	Ile	Ile	Asp	Glu	Cys	Arg	Ala	His	Asp	Pro
								260	265				270
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Ser	Lys												

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Asp	Gly	Lys	Gly	Thr	Leu	Leu	Ile	Arg	Asn	Gly	Ser	Glu	Val	Arg
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Leu	Gln	Asp	Asn	Leu	Val	Ile	Ala	Leu	His	Ser	Tyr	Glu	Pro	Ser
				65					70				75	
His	Asp	Gly	Asp	Leu	Gly	Phe	Glu	Lys	Gly	Glu	Gln	Leu	Arg	Ile
				80					85				90	
Leu	Glu	Gln	Ser	Gly	Glu	Trp	Trp	Lys	Ala	Gln	Ser	Leu	Thr	Thr
				95					100				105	
Gly	Gln	Glu	Gly	Phe	Ile	Pro	Phe	Asn	Phe	Val	Ala	Lys	Ala	Asn
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Ser	Leu	Glu	Pro	Glu	Ala	Asn	Leu	Met	Lys	Gln	Leu	Gln	His	Gln
				125					130				135	
Arg	Leu	Val	Arg	Leu	Tyr	Ala	Val	Val	Thr	Gln	Glu	Pro	Ile	Tyr
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Ile	Ile	Thr	Glu	Tyr	Met	Glu	Asn	Gly	Ser	Leu	Val	Asp	Phe	Leu
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Lys	Thr	Pro	Ser	Gly	Ile	Lys	Leu	Thr	Ile	Asn	Lys	Leu	Leu	Asp
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				185					190				195	
Asn	Tyr	Ile	His	Arg	Asp	Leu	Arg	Ala	Ala	Asn	Ile	Leu	Val	Ser
				200					205				210	
Asp	Thr	Leu	Ser	Cys	Lys	Ile	Ala	Asp	Phe	Gly	Leu	Ala	Arg	Leu
				215					220				225	
Ile	Glu	Asp	Asn	Glu	Tyr	Thr	Ala	Arg	Glu	Gly	Ala	Lys	Phe	Pro
				230					235				240	
Ile	Lys	Trp	Thr	Ala	Pro	Glu	Ala	Ile	Asn	Tyr	Gly	Thr	Phe	Thr
				245					250				255	
Ile	Lys	Ser	Asp	Val	Trp	Ser	Phe	Gly	Ile	Leu	Leu	Thr	Glu	Ile
				260					265				270	
Val	Thr	His	Gly	Arg	Ile	Pro	Tyr	Pro	Gly	Met	Thr	Asn	Pro	Glu
				275					280				285	
Val	Ile	Gln	Asn	Leu	Glu	Arg	Gly	Tyr	Arg	Met	Val	Arg	Pro	Asp
				290					295				300	
Asn	Cys	Pro	Glu	Glu	Leu	Tyr	Gln	Leu	Met	Arg	Leu	Cys	Trp	Lys
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Glu	Arg	Pro	Glu	Asp	Arg	Pro	Thr	Phe	Asp	Tyr	Leu	Arg	Ser	Val
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20					25				30					
Leu	Arg	Glu	Ile	Gly	His	Gly	Ser	Phe	Gly	Ala	Val	Tyr	Phe	Ala
35					40									45
Arg	Asp	Val	Arg	Asn	Ser	Glu	Val	Val	Ala	Ile	Lys	Lys	Met	Ser
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Tyr	Ser	Gly	Lys	Gln	Ser	Asn	Glu	Lys	Trp	Gln	Asp	Ile	Ile	Lys
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Arg	Tyr	Lys	Pro	Thr	Gly	Glu	Tyr	Val	Thr	Val	Arg	Arg	Ile	Asn
			35			40								45
Leu	Glu	Ala	Cys	Ser	Asn	Glu	Met	Val	Thr	Phe	Leu	Gln	Gly	Glu
	50						55							60
Leu	His	Val	Ser	Lys	Leu	Phe	Asn	His	Pro	Asn	Ile	Val	Pro	Tyr
	65						70							75
Arg	Ala	Thr	Phe	Ile	Ala	Asp	Asn	Glu	Leu	Trp	Val	Val	Thr	Ser
	80						85							90
Phe	Met	Ala	Tyr	Gly	Ser	Ala	Lys	Asp	Leu	Ile	Cys	Thr	His	Phe
	95							100						105
Met	Asp	Gly	Met	Asn	Glu	Leu	Ala	Ile	Ala	Tyr	Ile	Leu	Gln	Gly
	110							115						120
Val	Leu	Lys	Ala	Leu	Asp	Tyr	Ile	His	His	Met	Gly	Tyr	Val	His
	125							130						135
Arg	Ser	Val	Lys	Ala	Ser	His	Ile	Leu	Ile	Ser	Val	Asp	Gly	Lys
	140							145						150
Val	Tyr	Leu	Ser	Gly	Leu	Arg	Thr	Thr	Leu	Ser	Met	Ile	Ser	His
	155							160						165
Gly	Gln	Arg	Gln	Arg	Val	Val	His	Asp	Phe	Pro	Lys	Tyr	Ser	Val
	170							175						180
Lys	Val	Leu	Pro	Trp	Leu	Ser	Pro	Glu	Val	Leu	Gln	Gln	Asn	Leu
	185							190						195
Gln	Gly	Tyr	Asp	Ala	Lys	Ser	Asp	Ile	Tyr	Ser	Val	Gly	Ile	Thr
	200							205						210
Ala	Cys	Glu	Leu	Ala	Asn	Gly	His	Val	Pro	Phe	Lys	Asp	Met	Pro
	215							220						225
Ala	Thr	Gln	Met	Leu	Leu	Glu	Lys	Leu	Asn	Gly	Thr	Val	Pro	Cys
	230							235						240
Leu	Leu	Asp	Thr	Ser	Thr	Ile	Pro	Ala	Glu	Glu	Leu	Thr	Met	Ser
	245							250						255
Pro	Ser	Arg	Ser	Val	Ala	Asn	Ser	Gly	Leu	Ser	Asp	Ser	Leu	Thr
	260							265						270
Thr	Ser	Thr	Pro	Arg	Pro	Ser	Asn	Gly	Asp	Ser	Pro	Ser	His	Pro
	275							280						285
Tyr	His	Arg	Thr	Phe	Ser	Pro	His	Phe	His	His	Phe	Val	Glu	Gln
	290							295						300
Cys	Leu	Gln	Arg	Asn	Pro	Asp	Ala	Arg	Tyr	Pro	Cys	Trp	Pro	Gly
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 Val Ile Lys Glu Ile Asn Ile Ser Arg Met Ser Ser Lys Glu Arg
 35 40 45
 Glu Glu Ser Arg Arg Glu Val Ala Val Leu Ala Asn Met Lys His
 50 55 60
 Pro Asn Ile Val Gln Tyr Arg Glu Ser Phe Glu Gly Ile Leu Asp
 65 70 75
 Trp Phe Val Gln Ile Cys Leu Ala Leu Lys His Val His Asp Arg
 80 85 90
 Lys Ile Leu His Arg Asp Ile Lys Ser Gln Asn Ile Phe Leu Thr
 95 100 105
 Lys Asp Gly Thr Val Gln Leu Gly Asp Phe Gly Ile Ala Arg Val
 110 115 120
 Leu Asn Ser Thr Val Glu Leu Ala Arg Thr Cys Ile Gly Thr Pro
 125 130 135
 Tyr Tyr Leu Ser Pro Glu Ile Cys Glu Asn Lys Pro Tyr Asn Asn
 140 145 150
 Lys Ser Asp Ile Trp Ala Leu Gly Cys Val Leu Tyr Glu Leu Cys
 155 160 165
 Thr Leu Lys His Ala Phe Glu Ala Gly Ser Met Lys Asn Leu Val
 170 175 180
 Leu Lys Ile Ile Ser Gly Ser Phe Pro Pro Val Ser Leu His Tyr
 185 190 195
 Ser Tyr Asp Leu Arg Ser Leu Val Ser Gln Leu Phe Lys Arg Asn
 200 205 210
 Pro Arg Asp Arg Pro Ser Val Asn Ser Ile Leu Glu Lys Gly Phe
 215 220 225
 Ile Ala Lys Arg Ile Glu Lys Phe Leu Ser Pro Gln Leu Ile Ala
 230 235 240
 Glu Glu Phe Cys Leu Lys Thr Phe Ser Lys Phe Gly Ser Gln Pro
 245 250 255
 Ile Pro Ala Lys Arg Pro Ala Ser Gly Gln Asn Ser Ile Ser Val
 260 265 270
 Met Pro Ala Gln Lys Ile Thr Lys Pro Ala Ala Lys Tyr Gly Ile
 275 280 285
 Pro Leu Ala Tyr Lys Lys Tyr Gly Asp Lys Lys Leu His Glu Lys
 290 295 300
 Lys Pro Leu Gln Lys His Lys Gln Ala His Gln Thr Pro Glu Lys
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 Arg Val Asn Thr Gly Glu Glu Arg Arg Lys Ile Ser Glu Glu Ala
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 Ala Arg Lys Arg Arg Leu Glu Phe Ile Glu Lys Asp Lys Glu Arg
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 35 40 45
 Gln Gly Ser Gly Ser Arg Pro Pro Thr Pro Lys Ser Ser Pro Gln
 50 55 60
 Lys Thr Arg Lys Ser Pro Gln Val Thr Arg Gly Ser Pro Gln Lys
 65 70 75
 Thr Ser Cys Ser Pro Gln Lys Thr Arg Gln Ser Pro Gln Thr Leu
 80 85 90
 Lys Arg Ser Arg Val Thr Thr Ser Leu Glu Ala Leu Pro Thr Gly
 95 100 105
 Thr Val Leu Thr Asp Lys Ser Gly Arg Gln Trp Lys Leu Lys Ser
 110 115 120
 Phe Gln Thr Arg Asp Asn Gln Gly Ile Leu Tyr Glu Ala Ala Pro
 125 130 135
 Thr Ser Thr Leu Thr Cys Asp Ser Gly Pro Gln Lys Gln Lys Phe
 140 145 150
 Ser Leu Lys Leu Asp Ala Lys Asp Gly Arg Leu Phe Asn Glu Gln
 155 160 165
 Asn Phe Phe Gln Arg Ala Ala Lys Pro Leu Gln Val Asn Lys Trp
 170 175 180
 Lys Lys Leu Tyr Ser Thr Pro Leu Leu Ala Ile Pro Thr Cys Met
 185 190 195
 Gly Phe Gly Val His Gln Asp Lys Tyr Arg Phe Leu Val Leu Pro
 200 205 210
 Ser Leu Gly Arg Ser Leu Gln Ser Ala Leu Asp Val Ser Pro Lys
 215 220 225
 His Val Leu Ser Glu Arg Ser Val Leu Gln Val Ala Cys Arg Leu
 230 235 240
 Leu Asp Ala Leu Glu Phe Leu His Glu Asn Glu Tyr Val His Gly
 245 250 255
 Asn Val Thr Ala Glu Asn Ile Phe Val Asp Pro Glu Asp Gln Ser
 260 265 270
 Gln Val Thr Leu Ala Gly Tyr Gly Phe Ala Phe Arg Tyr Cys Pro
 275 280 285
 Ser Gly Lys His Val Ala Tyr Val Glu Gly Ser Arg Ser Pro His
 290 295 300
 Glu Gly Asp Leu Glu Phe Ile Ser Met Asp Leu His Lys Gly Cys
 305 310 315
 Gly Pro Ser Arg Arg Ser Asp Leu Gln Ser Leu Gly Tyr Cys Met
 320 325 330
 Leu Lys Trp Leu Tyr Gly Phe Leu Pro Trp Thr Asn Cys Leu Pro
 335 340 345
 Asn Thr Glu Asp Ile Met Lys Gln Lys Gln Lys Phe Val Asp Lys
 350 355 360
 Pro Gly Pro Phe Val Gly Pro Cys Gly His Trp Ile Arg Pro Ser
 365 370 375
 Glu Thr Leu Gln Lys Tyr Leu Lys Val Val Met Ala Leu Thr Tyr
 380 385 390
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					20				25					30

Ala	Ala	Ser	Lys	Ala	Leu	Leu	His	Gln	Tyr	Phe	Phe	Thr	Ala	Pro
					35				40					45

Leu	Pro	Ala	His	Pro	Ser	Glu	Leu	Pro	Ile	Pro	Gln	Arg	Leu	Gly
					50				55					60

Gly	Pro	Ala	Pro	Lys	Ala	His	Pro	Gly	Pro	Pro	His	Ile	His	Asp
					65				70					75

Phe	His	Val	Asp	Arg	Pro	Leu	Glu	Glu	Ser	Leu	Leu	Asn	Ser	Glu
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Leu	Ile	Arg	Pro	Phe	Ile	Leu	Glu	Gly						
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Glu	Thr	Gly	Ile	Lys	Ser	Lys	Glu	Ala	Arg	Lys	Tyr	Ile	Phe	Asn
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Cys	Leu	Asp	Ala	Cys	Val	Gln	Val	Asn	Met	Thr	Thr	Asp	Leu	Glu
					50				55					60

Gly	Ser	Asp	Met	Leu	Val	Glu	Lys	Ala	Asp	Arg	Arg	Glu	Phe	Ile
					65				70					75

Asp	Leu	Leu	Lys	Met	Leu	Thr	Ile	Asp	Ala	Asp	Lys	Arg	Ile	
					80				85					90

Thr	Pro	Ile	Glu	Thr	Leu	Asn	His	Pro	Phe	Val	Thr	Met	Thr	His
					95				100					105

Leu	Leu	Asp	Phe	Pro	His	Ser	Thr	His	Val	Lys	Ser	Cys	Phe	Gln
					110				115					120

Asn	Met	Glu	Ile	Cys	Lys	Arg	Arg	Val	Asn	Met	Tyr	Asp	Thr	Val
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Asn	Gln	Ser												
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